PART I DEPARTMENT OF PERSONNEL SERVICES 5.692
STATE OF HAWAII

Class Specification
for the Class:

ENVIRONMENTAL HEALTH SPECIALIST I

Duties Summary:

Serves in a trainee capacity, receiving formal and on-the-job training in the environmental health program; and performs other duties as required.

Distinguishing Characteristics:

This is a trainee class, involving formal and on-the-job training, designed to develop an incumbent of this class to the next higher level in the Environmental Health Specialist series. Supervision is immediate and assignments are tailored to provide experience and training in the protection and promotion of public health through the conduct of field and laboratory surveys and the enforcement of laws, rules and regulations pertaining to occupational and radiological health and air sanitation control.

Examples of Duties:

Attends orientation and training sessions and learns the principles and practices, laws, rules and regulations, concepts, work processes and activities of the environmental health program; accompanies higher level specialists on field trips, receives laboratory training in techniques and operating procedures and concurrently performs simple tasks in the field and laboratory; performs routine field and laboratory work assignments in the conduct of laboratory and field tests on air contaminants, in the inspection of fuel-burning equipment, in the inspection of X-ray producing machines and other work areas in the environmental health program.

Knowledges and Abilities Required:

Knowledge of: Basic chemical and physical sciences; biological sciences; use, operation and care of standard laboratory and field instruments; standard laboratory and survey methods.

Ability to: Carry out under immediate supervision simple or routine tasks in the environmental health program.

This is the first specification for the new class ENVIRONMENTAL HEALTH SPECIALIST I.

APPROVED: 7/30/70 JAMES H. TAKUSHI
Director of Personnel Services

SEP 4 1970

Copies sent to:
District Health Offices - Hawaii, Kauai, Maui
C/S Personnel Representative Office

PART I

DEPARTMENT OF PERSONNEL SERVICES
STATE OF HAWAII

Class Specification
for the

ENVIRONMENTAL HEALTH SPECIALIST SERIES

This series includes all classes of positions the duties of which are to protect and promote public health through the conduct of field and laboratory surveys and the enforcement of laws, rules and regulations pertaining to occupational and radiological health and air sanitation control. These activities primarily require the application of the physical sciences to the survey of environmental health conditions. Work involves laboratory analyses to prepare measurements for the varying increases or decreases in the conditions of the study area and to provide technical support to the development and implementation of laws, rules and regulations. Field work involves the control and survey of chemicals, machinery and processes potentially hazardous and injurious to public health and consultant services to users.

There are two specialty areas within this series:

1. Industrial Hygiene -- Involves concern for the protection of the employee in the work situation. Includes: examination of radiation sources and machines to reduce and minimize exposure; control of potentially hazardous fumigation operations; and the examination of plans and installation of ventilating units to determine adequacy and protection of the public.

2. Air Sanitation -- Includes: study of factors and situations to reduce the emission of pollutants into the air; study to permit or prohibit the use of chemicals which affect man and his environment; and measurements of the presence of sensitizing substances in the air and relating the concentration to incidents of certain respiratory diseases.

Class levels in this series are distinguished on the basis of nature and variety of work; nature of supervision received; nature of available guidelines for performance of work; originality required; nature and purpose of person-to-person relationships; nature and scope of recommendations, decisions, commitments and conclusions; and nature and extent of supervision exercised.

This series replaces the following classes:

Radiological Health Inspector	8.347
Air Pollution Inspector	8.345
Industrial Hygienist	5.620

APPROVED: June 20, 1969

(Mrs.) EDNA TAVARES TAUFAASAU
Director of Personnel Services

6/18/69

ENVIRONMENTAL HEALTH SPECIALIST II 5.594

Duties Summary:

Performs a variety of standard chemical analyses and physical tests in accordance with prescribed procedures in a laboratory; participates in field inspection and surveys; and performs other duties as required.

Distinguishing Characteristics:

Environmental health specialists at this level are given assignments to develop them in laboratory techniques and operating procedures, and assignments in field participation designed to provide work experience in interpreting and enforcing laws, rules and regulations pertaining to occupational and radiological health and air contaminant and pollution control. Assignments typically include standard collection and analysis of samples and the performance of standard chemical and physical field tests. Incumbents of this class initially work under the close supervision of a laboratory chemist or a higher-level environmental health specialist who determines the work to be performed and specifies the procedures to be followed; work is reviewed in progress and on completion for technical adequacy. Personal contacts are usually limited to other employees in the organization and participation in an observation role on field investigation and educational assignments.

Examples of Duties:

Collects and analyzes air samples for atmospheric contaminants; calibrates and maintains field sampling equipment; prepares and standardizes reagents for analytical studies; participates in pollution studies; participates in the conduct of investigations of complaints of discharge of dense smoke, particulate matter, pesticides and other air contaminants; participates in the conduct of surveys of X-ray laboratories and work areas using X-ray machines to determine radiation exposure to workers and the public; participates in surveys of plants and installations to determine existence of possible environmental health hazards; cleans and maintains laboratory and field testing equipment; prepares reports and records of test results; participates in the training programs of related environmental health programs.

Knowledges and Abilities Required:

Knowledge of: The basic theories and principles of the chemical and physical sciences; biological sciences; the use, operation and care of standard laboratory instruments; standard laboratory procedures and survey methods.

Ability to: Conduct standard chemical and physical laboratory and field tests; participate in field investigations and educational assignments of the program; learn to apply and interpret the laws, rules and regulations pertaining to the work area; and participate in occupational and radiological health and air pollution control surveys.

ENVIRONMENTAL HEALTH SPECIALIST III 5.596

Duties Summary:

Performs a variety of laboratory, survey, inspectional, corrective and educational work assignments in the occupational and radiological health or air sanitation control programs; and performs other duties as required.

Distinguishing Characteristics:

This level reflects responsibility for the performance of a variety of laboratory, field survey, correctional and educational assignments designed to control and develop work areas of the occupational and radiological health or air sanitation control programs. Analyses involve deviations from known standards and selection from a variety of identified investigative laboratory or field techniques and equipment. Such activities may include the investigation and resolving of air pollution complaints and study and certification of machinery which emit contaminants, or the ongoing inspection and control of the use and operation of radiological equipment.

Environmental health specialists at this level are required to apply a thorough knowledge of laboratory and field tests applicable to the work area, machinery and methods affecting the control of occupational and radiological health and air sanitation. Incumbents are also required to recommend corrective measures and validly interpret the laws, rules and regulations applying to the area of assignment. Technical responsibility for the evaluation of substandard conditions of operation and recommendations for corrective measures or legal proceedings is a requirement at this level. Incumbents must deal with the public to gain their cooperation in complying with standards of the occupational and radiological health and air sanitation control program. Work is performed under general supervision.

Examples of Duties:

Plans and organizes surveillance and correctional laboratory and field testing activities in accordance to needs of the assigned work area and program procedures; conducts investigations of complaints of discharges of dense smoke, particulate matter, pesticides and other contaminants relative to air pollution; conducts laboratory analyses for atmospheric contaminants determining their nature, concentration, size distribution, volume or weight, and other physical characteristics; certifies the installation of fuel-burning equipment; conducts surveys for nonregistered sources discharging air contaminants; inspects fuel-burning equipment in operation and makes recommendations for correction or adjustment of equipment; maintains air sampling stations for pollutants; conducts surveys of plants and installations to evaluate types of operations, processes, raw and finished materials, preventive measures, work schedules and physical layout to determine existence of possible hazardous conditions; conducts surveys of X-ray laboratories and work areas using X-ray producing machines to determine radiation exposures to workers and the public and recommends the institution of preventive and corrective measures to reduce, eliminate and minimize any hazardous situations;

operates such devices as geiger counters, dosimeters and ion chambers to detect and measure radiation; and to enforce the proper shielding, coning and filtration and X-ray and other radiation machines to minimize the hazards of burns and scattered radiation; meets with radiologists, physicians, dentists, technicians and others regarding radiation exposure rates and safety practices in the operation and use of radiation machines and radioactive materials; reviews plans for adequate air conditioning and ventilation; inspects for safe use of chemicals by private fumigators; prepares reports of survey inspections and makes recommendations; testifies in legal proceedings; participates in training activities of related environmental health programs by providing information on surveillance techniques and interpretation of laws, rules and regulations pertaining to program.

Knowledges and Abilities Required:

Knowledge of: Thorough knowledge of the chemical and physical sciences as applied to occupational and radiological health or air sanitation control; biological sciences; laboratory and field testing machinery and techniques; public health inspectional and investigational methods and practices; public relations; the interpretation of public health laws, rules and regulations pertaining to occupational and radiological health or air sanitation.

Ability to: Plan and conduct individual surveys of air pollution or radiological and occupational health control; interpret and apply laws, rules and regulations pertaining to the work area; provide consultation and advisory services to the users and owners of various equipment, chemicals, and processes for the control of environmental health conditions.

ENVIRONMENTAL HEALTH SPECIALIST IV 5.598

Duties Summary:

Plans, organizes and performs survey and/or research activities in the specialized and complex areas of the occupational and radiological health or air sanitation control programs; and performs other duties as required.

Distinguishing Characteristics:

This level requires the performance of work in specialized areas of the occupational and radiological health or air sanitation programs. Such work requires the initiation of research studies or the development and use of advanced and highly complex laboratory and field testing techniques. Considerable judgment is required in developing study objectives, developing laboratory and field techniques and interpreting results into new standards of operation or regulation. Incumbents are subject to administrative supervision, and technical aspects of the work are generally accepted without review except in unusual or critical situations. Work projects may require the supervision of several assigned subordinate professional positions. Public contact is essential to this level for management and public acceptance of new regulations or operating methods.

Examples of Duties:

Plans and conducts surveys to support the adoption of new laws, rules and regulations; testifies in legal proceedings on results of technical analyses; selects and adopts analytical procedures and methods for detection of new chemicals and the presence and toxic effects of chemicals on man; conducts laboratory examinations to determine the types and amounts of toxic substances in dusts, fumes, mists and gases and liquid samples to which workers are exposed at work sites; advises on standards for air conditioning and ventilation equipment; conducts training courses for subordinate environmental health specialists and employees of related health programs; uses chromatography, ultraviolet, visible and infrared spectrophotometry and microscopy to determine the extent of toxicity; devises new or improved methods and apparatus for laboratory and field analyses; reads scientific and technical literature to keep abreast of new developments.

Knowledges and Abilities Required:

Knowledge of: Advanced field and laboratory research methods and techniques; comprehensive knowledge of the chemical and physical sciences as applied to occupational and radiological health or air sanitation control; biological sciences; public inspectional and investigational methods and practices; public relations; comprehensive knowledge of the interpretation of public health laws, rules and regulations pertaining to occupational and radiological health or air sanitation.

Ability to: Plan and conduct research or specialized surveys; employ advanced techniques of the chemical and physical sciences; interpret and formulate new legislation pertaining to the work area.

ENVIRONMENTAL HEALTH SPECIALIST V 5.600

Duties Summary:

Supervises the operation and development of an occupational and radiological health or air sanitation program; and performs other duties as required.

Distinguishing Characteristics:

This class involves the supervision and coordination of the activities of assigned staff engaged in the various chemical, physical and engineering analyses of the occupational and radiological health or air sanitation control programs. Work involves the coordination of inspectional and survey activities with research and development assignments, and participation in the development of program objectives and policies. Work development is reviewed by the state-wide administrator of the program for conformance to program objectives and policies. Technical analyses and recommendations made by an incumbent are considered to be authoritative. An environmental health specialist at this level has extensive contacts with other governmental agencies and the public to facilitate program procedures and objectives.

Examples of Duties:

Plans, organizes, supervises and coordinates the activities of an occupational and radiological health or air sanitation control program; surveys the needs of the community and coordinates the surveillance activities of the program; reviews the work of subordinate personnel engaged in environmental engineering examinations of air conditioning, ventilation and air pollution equipment; directs the work of staff engaged in research and development of new standards for the adoption of new laws, rules and regulations or in the research of related work area environmental factors injurious to public health; may personally perform inspectional and laboratory analytical work in the program area; prepares program or special survey reports; testifies in legal proceedings to substantiate findings and actions of subordinate personnel; assists in planning the program budget and formulating program policies.

Knowledges and Abilities Required:

In addition to the knowledges and abilities required at the next lower level, this level requires:

A knowledge of the principles and practices of supervision; program planning; departmental objectives and policies.

An ability to plan and organize the chemistry, physics and environmental engineering surveillance and developmental activities of an occupational and radiological health or air sanitation control program.

ENVIRONMENTAL HEALTH SPECIALIST VII 5.602

Duties Summary:

Plans, develops and administers the objectives, standards, procedures and policies of the state-wide programs of occupational and radiological health or air sanitation; directs and coordinates the work of subordinate personnel; and performs other duties as required.

Distinguishing Characteristics:

The environmental health specialist at this level has responsibility for the conduct of a state-wide branch program employing the chemical and physical sciences in the control and development of such areas as occupational and radiological health, fumigation control, ventilation and air conditioning control and/or air sanitation surveys. Activities include the formulation of new legislation affecting the program and interpretation and enforcement of existing laws, rules and regulations. Effective use of personnel and program budgeting is a requirement of this class. Work is performed within the broad policies and objectives of the department.

Examples of Duties:

Plans, organizes and directs the laboratory, field and office activities of the occupational and radiological health or air sanitation programs; plans and prepares new legislation and regulations because of changing conditions and introduction of new and technical developments in the program area; coordinates the engineering, physics and chemistry activities of assigned staff; develops research studies by outlining objectives and reviewing progress of analyses; holds preliminary hearings of violations to institute legal proceedings to obtain compliance; secures federal financial support for program; prepares budget for operations and the purchase of new equipment; prepares reports and presents talks before the public to develop and promote the objectives of the program; participates in civil defense programs; prepares and evaluates examinations and issues licenses to fumigators in the State; provides consultative services and interpretations to various segments of the public such as architects, engineers, management and public officials as to the adequacy of standards of the program.

Knowledges and Abilities Required:

In addition to the requirements of the lower levels in this series, this class requires:

A knowledge of administrative principles and practices; the status of occupational and radiological health and air sanitation programs nationally and locally; departmental policies governing the function of the occupational and radiological health and air sanitation programs in relation to other programs of the department; and program planning.

An ability to develop, plan and organize a state-wide program of occupational and radiological health or air sanitation using existing and potential manpower and material resources.

3-2-70 Copies sent to
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DHO-Hawaii, Maui & Kauai
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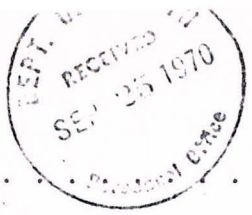
Environmental Health
DHEW

6/18/69

PART II

DEPARTMENT OF PERSONNEL SERVICES
STATE OF HAWAII



5.592
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5.602

Minimum Qualification Specifications
for the Classes:

ENVIRONMENTAL HEALTH SPECIALIST I, II, III, IV, V, & VII

Educational Requirements:

Graduation from an accredited college or university with a major in chemistry, physics, biology, zoology, or other field related to environmental sanitation.

Professional experience in the fields mentioned above or in the fields of environmental health sanitation may be substituted for education on a year-for-year basis.

Experience Requirements:

Except for the substitutions provided for in these specifications, applicants must have had progressively responsible experience of the kind and quality described below and in the amounts shown in the following table:

	General Experience	Specialized Experience	Supervisory Experience	Administrative Experience	Total (Yrs.)
Level I	0	0	0	0	0
Level II	1	0	0	0	1
Level III	1	1	0	0	2
Level IV	1	2	0	0	3
Level V	1	3	*	0	4
Level VII	1	3	2	**	6

General Experience: Responsible professional work experience in chemistry, physics, biology, zoology or other closely related scientific field which provides knowledges and skills appropriate to field of environmental health sanitation. The work must have required the ability to apply the scientific laws and principles of the field and to interpret and evaluate the results of research and analysis by other professionals.

Specialized Experience: Progressively responsible professional work experience in the field of environmental health which required a knowledge and application of the principles, practices, and techniques of sanitation including, but not limited to such duties and responsibilities as: conducting laboratory and field tests on air contaminants; inspecting fuel-burning equipment and recommending necessary adjustments; inspecting X-ray producing machines to minimize the hazards of burns and scattered radiation; reviewing and advising on standards for air conditioning and ventilation plans and equipment; conducting field and laboratory analysis, inspections and/or investigations on water, food and drug samples for discovery of existing and potential

environmental pollution violations; working with managers and the public for the acceptance of environmental health regulations and practices.

Applicants for the Environmental Health Specialist IV level and above must have had at least one year of experience comparable in scope and responsibility to that of the next lower level in the State service.

Supervisory Experience: Professional experience in the field of environmental health which included such duties and responsibilities as coordinating and assigning work of subordinate environmental health specialists, evaluating their performance, providing technical assistance in difficult and problem cases and conducting training of professionals and technicians involved in the areas of occupational and radiological health or air sanitation control programs. *Supervisory Aptitude: Applicants for the Environmental Health Specialist V level must possess Supervisory Aptitude. Supervisory Aptitude is the demonstration of aptitude or potential for the performance of supervisory duties through successful completion of regular or special assignments which involve some supervisor responsibilities or aspects; by serving as a group or team leader, or in similar work in which opportunities for demonstrating supervisory capabilities exist; by completion of training courses in supervision accompanied by application of supervisory skills in work assignments; or by favorable appraisals by a supervisor indicating the possession of supervisory potential.

Quality of Experience: Possession of the required amount of experience will not in itself be accepted as proof of qualification. The applicant's overall experience must have been of such scope and responsibility as to conclusively demonstrate that he has the ability to perform the duties of the position for which he is being considered, e.g., 1) the experience must have demonstrated that the applicant has a good working knowledge of the principles, practices, techniques and objectives of environmental health programs; and 2) the ability to recognize and analyze occupational and radiological health, air sanitation and/or other pertinent sanitation problems through proper laboratory and field testing techniques and to apply pertinent public health laws, rules and regulations; educate and motivate managers and the public to comply with environmental health requirements and to upgrade the quality of existing environmental health conditions.

**Administrative Aptitude: Applicants for the Environmental Health Specialist VII level must possess administrative aptitude. Administrative aptitude will be considered to have been met when there is strong affirmative evidence of the necessary administrative aptitudes and abilities. Such evidence may be in the form of success in regular or special assignments or projects which involved administrative problems (e.g., in planning, organizing, promoting and directing a program providing staff advice and assistance); interest in management demonstrated by the performance of work assignments in a manner which clearly indicates awareness of managerial problems and the ability to solve them; completion of educational or training courses in the areas of management accompanied by the application of the principles which were learned to work assignments; management's observation and evaluation of the applicant's leadership and managerial capabilities; success in trial assignments to managerial and/or administrative tasks.

Substitutions Allowed:

1. Possession of a master's degree from an accredited college or university with a major in physics, chemistry, biology, zoology, or other related science may be substituted for one year of Specialized Experience.

2. Possession of a PhD in the fields mentioned above may be substituted for three years of Specialized Experience.

3. Excess Specialized Experience may be substituted for General Experience.

Selective Certification:

Some positions may require a background and thorough knowledge of a particular field or area of environmental health, e.g., occupational and radiological health or air sanitation control. For such positions, certification may be restricted to eligibles who possess the pertinent experience and training to perform the duties of the position. Agencies requesting selective certification must substantiate their reasons for requesting selective certification.

Driver's License:

Possession of a Hawaii State motor vehicle operator's license is required for most positions.

Tests:

For competitive examinations, all applicants must qualify on an appropriate examination for the class. For non competitive actions, the examination may be waived.

Physical Requirements:

Standard 3 g. Applicants must be physically able to perform efficiently the duties of the position which are described elsewhere in this specification. Good distant vision in one eye and ability to read without strain printed material the size of typewritten characters are required, glasses permitted. Ability to hear the conversational voice, with or without a hearing aid is required. In most instances, an amputation of arm, leg or foot will not disqualify an applicant for appointment, although it may be necessary that this condition be compensated by use of satisfactory prosthesis. Any physical condition which would cause the applicant to be a hazard to himself or to others will disqualify for appointment. In addition, applicants must possess emotional and mental stability. A person with a handicap will be considered upon demonstration of ability to perform the required tasks or have the ability to perform the required tasks or have the ability or means to compensate sufficiently for his handicap to perform the job.

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This is an amendment to the class specifications which were approved January 29, 1970.

DATE APPROVED: September 16, 1970 (for) JAMES H. TAKUSHI
Director of Personnel Services

9-25-70 Copies sent to:
District Health Office - Hawaii, Kauai, Maui
C/S Hospital Administrative Office
Hawaii State Hospital
Kalaupapa Training School & Hospital
Personnel Office-alpha & occup. code files

Ex, Director, Hlth Dir.
Chief, Air Sanitation
Chief, Occup & Rad Hlth Br.
Chief, Sanitary Engineering
Hon E.O, Eff

PART I

DEPARTMENT OF PERSONNEL SERVICES
STATE OF HAWAII

Class Specification
for the

ENGINEERING SERIES

Series Definition:

This is a multi-series, covering various recognized professional engineering series of classes which require application of professional engineering knowledge and abilities in the solution of engineering problems. Positions in this series have responsibility for management, supervision or performance of planning, design, construction, inspection, production, application, standardization, operation or maintenance of engineering facilities, structures, systems, processes, equipment, devices or materials.

Classes in this series all require a common core of professional engineering knowledge such as is acquired in a four-year course in engineering in a college or university, including courses in physics, chemistry, mathematics through integral calculus, and engineering sciences such as statics, dynamics, strength of materials, thermodynamics and fluid mechanics, and in addition specialized courses and/or experience in an area of specialization relating to the branch of engineering involved.

Determination of Levels:

Although the subject matter varies according to the requirements of each engineering specialty, the factors determining levels of difficulty and responsibility are essentially the same for all specialty areas; consequently the numbering system is constant for all areas of specialization. The grade of an engineer position depends largely upon the following classification factors: scope and difficulty of the engineering projects that are assigned; nature of available guidelines for performance of the work; originality required; nature and purpose of personal contacts maintained with others; nature of supervisory controls exercised over the work, which reflects the extent to which the engineer's technical judgment is relied upon without detailed review; nature and scope of recommendations, decisions, commitments and conclusions; nature and extent of supervisory responsibility for the work of other employees; and qualifications required.

Use of Specialty Titles:

Grade levels for all professional engineering positions will be established by reference to this classification standard, with the required specialization indicated by the use of the appropriate descriptive title, for example, by reference to the criteria of this specification, the work of an electrical engineer warranting allocation to the IV level will become Engineer (Electrical) IV. These titles do not represent mutually exclusive areas of specialization, and overlap in certain instances. This is particularly noteworthy in the case of Engineer (Civil), which is a broad, general series which typically is to be used for trainee positions, and for higher level civil engineer classes not specifically requiring knowledge and/or experience in a narrow, more specialized field.

The following specialty titles are established:

Engineer (Civil) - Includes those professional engineering positions concerned with the planning, design and/or construction and maintenance of structures and facilities such as roads, airfields, bridges, tunnels, harbors, reservoirs, pipelines, powerplants, water and sewage systems, and buildings.

Engineer (Electrical) - Includes those professional engineering positions concerned with the design, planning, production, installation, operation and maintenance of electric or electronic components, equipment, systems, facilities and machinery used in the generation, transmission, distribution, and utilization of electrical energy.

Engineer (Mechanical) - Includes those professional engineering positions concerned with the designing, production, installation and maintenance of tools and machines; typical sub-specializations are power generation and transmission, automotive engineering, heating and ventilation, air conditioning, machine design and research.

Engineer (Environmental) - Includes those professional positions engaged in the application of engineering principles and practices to the protection or improvement of public health and well-being. These positions involve the design, maintenance and operation of systems and facilities concerned with preservation and enhancement of environmental conditions, including air, water, shelter, food, disposal of liquid and solid wastes, vector and rodent control, industrial hygiene, and institutional hygiene. In addition to a basic background of professional engineering, these classes require specialized knowledge, based on experience and/or training, in biological sciences such as bacteriology, organic chemistry and entomology.

Engineer (Safety) - Includes those professional engineering positions engaged in the control of physical conditions and practices, with the objective of eliminating the factors which are known or predicted to result in injury to persons or damage to property. These positions typically involve safety program management plus the generalized application of knowledge of several engineering disciplines (e.g., civil, electrical and mechanical engineering) where any one specialty area is not primary.

Engineer (Public Utilities) - Includes those professional engineering positions involved in the regulation and control of public utility services and facilities such as electricity, gas, water, communications and transportation, where one area of engineering specialization is not primary. These positions typically require general knowledge of more than one field of engineering (e.g., civil, electrical, and mechanical engineering) as well as knowledge of the laws, rules and regulations governing the operational activities of franchised enterprises providing power, energy, communication and transportation services to the public.

Engineer (Structural) - Includes those professional engineering positions concerned particularly with application of the theories of structural dynamics, including distribution of loads, stresses, and strength of materials to the planning, design and/or construction of buildings and other structures. Although this is an area of specialization within the general Civil Engineering discipline, a clearly defined body of knowledge required, based on specialized training and/or experience, is identifiable at the higher levels (i.e., IV and above).

Engineer (Buildings) - Includes those professional engineering positions concerned with the planning, design, construction, and/or maintenance of buildings and ancillary facilities. These positions typically require general knowledge of more than one field of engineering (e.g., civil, architectural, electrical, mechanical and structural) as well as a thorough knowledge of the laws, codes, rules and regulations relating to the design and construction of buildings. Although this is an area of specialization within the general Civil Engineering discipline, a clearly defined body of knowledge required, based on specialized training and/or experience, is identifiable at the higher levels (i.e., IV and above).

This series replaces the following State of Hawaii classes:

Civil Engineer I
Civil Engineer II
Civil Engineer III
Civil Engineer IV
Civil Engineer V
Civil Engineer VI
Civil Engineer VII
Civil Engineer VIII
Director of Public Building Construction
Assistant Director of Public Building Planning
Tunnel Construction Engineer
Bridge Design Engineer I
Bridge Design Engineer II
Hydraulic Engineer
Materials Research and Testing Engineer
Public Utility Engineer I
Public Utility Engineer II
Chief of Planning and Engineering
Industrial Safety Engineer
Sanitary Engineer I
Sanitary Engineer II
Sanitary Engineer III
Sanitary Engineer IV
Sanitary Engineer V
Sanitary Engineer VI
Air Pollution Engineer
Industrial Hygiene Engineer
Electrical Engineer I
Electrical Engineer II
Electrical Engineer III
Electrical Engineer IV

APPROVED: August 28, 1968

(Mrs.) EDNA TAVARES TAUFAASAU
Director of Personnel Services

8/23/68

10/31/68 DHR Hawaii State Hospital
Maui Emerg. Neth (8)
Kauai
Waimano

ENGINEER I 7.001

Duties Summary:

Performs routine professional engineering work requiring the application of basic engineering principles and techniques, according to specific instructions, and following well-established practices; and performs other duties as required.

Distinguishing Characteristics:

This is the beginning or trainee level in the professional engineering series. The purpose of assignments at this level is to orient the employee in the practical application of theory and basic principles. Instructions are received in specific terms as to methods, procedures and the results expected. Specific duties and work assignments at this level may be similar to those of nonprofessional employees, but such assignments are primarily for training purposes to equip the incumbent to assume more responsible engineering duties. Supervision is continuous in most phases of activity, with detailed review on completion of assignments.

Examples of Duties:

The following are illustrative only, and not all-inclusive: Under close supervision of a higher-level engineer, performs calculations, applying standard engineering formulas; prepares graphs, curves and tables; records factual data in tests and observation studies; performs drafting and minor detail design; performs inspection and surveying duties, and searches technical reports and records to obtain information relating to work assignments.

Knowledges and Abilities Required:

Knowledge of the basic principles, theories and practices of engineering including higher mathematics, physical and engineering sciences, and the application of basic sciences to engineering in general, such as may be acquired through completion of a full four-year engineering curriculum leading to the bachelor's degree in an accredited college or university. Ability to carry out under close supervision simple or routine tasks in support of higher-level professional work.

ENGINEER II 7.002

Duties Summary:

Performs specific and limited professional engineering assignments requiring application of standard professional methods and techniques, which may involve minor phases of a broad project; and performs other duties as required.

Distinguishing Characteristics:

Does routine professional engineering tasks, using prescribed methods and techniques, but with more latitude than is present at the next lower level, for using independent judgment in selecting appropriate guidelines and precedents for accomplishing individual assignments, as well as in recognizing discrepancies, omissions or deviations in technical data. An incumbent works under general supervision on repetitive assignments, with detailed calculations, findings and

recommendations on such assignments generally accepted as technically accurate, although they may be spot-checked or verified. On new or more complex assignments, specific detailed instructions are initially given by the supervisor, advice and guidance are available during work progress, and completed work is reviewed in detail for technical accuracy, adequacy, and conformance to prescribed policy and procedures. Person-to-person contacts at this level are ordinarily within the organization to present factual information directly applicable to individual assignments. An incumbent of this class may supervise or instruct sub-professional personnel or Engineers I on individual assignments or minor projects.

Examples of Duties:

The following are illustrative only and not all-inclusive: Does routine professional engineering work in the planning, design, construction, maintenance, inspection and/or operation of civil engineering projects; assists higher level engineers in preparing designs, plans, specifications, estimates and reports.

Under close supervision of a higher level environmental engineer, makes field investigations and studies of sewage disposal systems, swimming pools and bathing places, water supply and distribution systems and similar facilities for the purpose of improving facilities and practices; makes reports of findings and recommendations; and assists higher-level engineers in broader aspects of public health environmental engineering work.

Knowledges and Abilities Required:

In addition to the knowledge and abilities required at the next lower level, this level requires: a sufficient working knowledge of the principles, practices and techniques in the area of assignment to perform a variety of repetitive tasks without detailed and specific instructions; a general knowledge of applicable regulatory and procedural issuances; and the ability to select and apply standard guides, methods and techniques within the area of assignment.

ENGINEER III 7.003

Duties Summary:

Performs moderately difficult professional engineering work in the planning, design, construction, maintenance, operation and/or evaluation of engineering projects or facilities, or assists higher-level engineers on more complex projects; and performs other duties as required.

Distinguishing Characteristics:

Assignments at this level usually consist of work similar to that previously done in the organization, and can be performed without substantial adaptation or with only minor modifications to standard designs, practices or criteria. An engineer at this level often carries out portions of more complex projects assigned to a higher-level engineer. Assignments are given in terms of specific objectives, with instructions as to possible complex features and the means of their solution. Standard technical methods, computations, and details are seldom reviewed by supervisor; completed work is reviewed for soundness of technical

engineering judgment and to ensure completion of assignments. Where there is serious consequence of errors, a complete review may be made. Person-to-person contacts at this level are generally limited to an exchange of factual, technical information with co-workers, except for field positions and those concerned with cooperative programs with the public, which may involve contacts with engineers and inspectors of other government agencies or jurisdictions, contractors, property owners, utility companies, and other employees to give and receive factual information. An incumbent may supervise lower-level engineers or sub-professional personnel in the performance of routine engineering duties.

Examples of Duties:

The following are illustrative only and not all-inclusive:

Engineer (Civil) - Assumes responsibility for civil engineering projects of a well-defined, routine or uncomplicated nature or assists a civil engineer of higher level on more complex projects, such as the designing of reservoirs, retaining walls, bridges, culverts, tunnels, pipelines, sidewalks, highways, wharves and other structures, by computing grades and alignments, loading and stresses, and determining the size, proportion and dimensions of structures. May supervise a small group of lower-level professional and sub-professional engineering personnel engaged in civil engineering activities.

Engineer (Environmental) - Makes field investigations and studies of sewage disposal systems, water supply systems, and the pollution of water by sewage and industrial wastes, and makes reports and recommendations for improvement of plant operations or waste discharge practices to eliminate or reduce pollution. May survey the engineering features of and make recommendations relating to milk and food processing plants, vector control programs, industrial sanitation, building lighting, ventilation and plumbing, air pollution, noise, and residential sewage disposal. Assists higher-level environmental engineers with the preparation of designs, plans and specifications for public health engineering projects.

Engineer (Electrical) - Conducts investigations and studies of electrical systems for the purpose of controlling and preventing radio and television interference, using standard testing equipment, and makes recommendations for corrective action; may assist higher-level electrical engineers in planning, designing, and overseeing the installation and maintenance of illumination and power transmission systems, and electrical machinery and apparatus in public buildings.

Knowledges and Abilities Required:

In addition to the knowledge and abilities required at lower levels, this level requires: a good knowledge of standard guides, precedents, methods, and techniques in the specialization or area of assignment; a sound working knowledge of applicable regulatory material, established procedures and policies of the department, and of other sources of information useful in developing work assigned, such as is supplied by manufacturers and other establishments working in the same field.

The ability to recognize interrelationships with related engineering assignments in the organization; locate, evaluate, select, and apply standard guides, precedents, methods, and techniques; and supervise and instruct lower level personnel engaged in routine engineering activities.

ENGINEER IV 7.004

Duties Summary:

Performs difficult and complex professional engineering work in the planning, design, construction, maintenance and/or operation of specialized engineering projects; or plans and conducts research, development, or other work in a specialized engineering field for the purpose of improving, extending or validating precedents, data, methods or techniques; and performs other duties as required.

Distinguishing Characteristics:

A position in this class is a fully-operating specialist in all the conventional aspects of subject matter or functional area of assignment. An engineer at this level assumes responsibility for a major and complex engineering project, or several less complex projects. Assignments are usually given with a statement of the objectives, limits of the assignment, suggested overall plan of work, and nature of results expected. The incumbent determines the criteria and techniques to be applied in accomplishing the assignment, and usually carries the work through to completion with little guidance from his supervisor, except in cases of controversial or complex problems involving untried or unusual techniques and methods, or questions of policy. Completed work is reviewed for overall technical adequacy and conformance with the objectives of the assignment, with technical correctness of standard calculations, analyses, methods, and techniques usually accepted by the supervisor. Recommendations and findings are often used as a basis for action by others. Guidelines include all those indicated at the previous levels; however, since complex features normally occur in assignments at this level, an incumbent must apply experienced judgment in modifying, adapting, or deviating from standard guidelines. Originality is required in the application of standard engineering practices to new situations and in relating new work situations to precedent ones. In dealing with the public and outside agencies, an incumbent makes commitments on matters covered by precedents, agency regulations, policies and accepted engineering practices. A field position or one concerned with cooperative programs affecting the public frequently involves contacts with other government agencies, contractors, private industry, and public groups to explain and interpret applicable laws, regulations, and procedures. An incumbent may supervise or be assisted by and give technical guidance to lower-level professional and sub-professional engineering personnel, who make investigations, collect data, perform detailed computations, or do simple design or analysis work.

Examples of Assignments:

The following illustrative examples of assignments, while not all-inclusive, are illustrative of work performed in this class:

Engineer (Civil) - Does professional engineering work in the planning, design, construction, maintenance and/or operation of major civil engineering projects.

Engineer (Buildings) - Does professional engineering work in the planning, design, construction and/or maintenance of public buildings and ancillary facilities. Coordinates the work of private consultants on planning projects such as master plans for a minor complex or a limited system of buildings, or project

development reports for individual buildings. May supervise lower-level professional and/or sub-professional engineering personnel, as assigned, in the inspection of buildings and related facilities construction.

Engineer (Electrical) - Prepares designs, plans, specifications and estimates for illumination, power and intercommunications for schools and other public buildings; reviews electrical plans and specifications prepared by contract architects or engineers for compliance with electrical code and departmental standards, and inspects electrical work in progress.

Engineer (Environmental) - Performs professional engineering work and supervises professional and nonprofessional personnel in one or more phases of a general environmental sanitation and health program; examines and evaluates plans and specifications for environmental engineering structures, systems and operations; makes studies and investigations of general sanitation conditions affecting stream and shore water pollution, community and industrial waste disposal, adequacy of drainage and potable water systems, air pollution control, and industrial hygiene, involving, when necessary, laboratory services; makes reports and recommendations relating to such studies; reviews proposed plans for public and private buildings and facilities for conformance to public health standards, rules and regulations.

Engineer (Public Utilities) - Conducts technical studies, investigations, and analyses relating to the regulation of electrical, gas, telephone, water and transportation operations, functions, and services provided by public utility companies; assists in the preparation and review of standards and criteria, regulations, and proposed legislation relating to operation and requirements of utility systems and facilities.

Engineer (Safety) - Performs professional engineering services in a program of industrial safety, including reviewing blueprints and specifications of industrial installations for compliance with State safety codes, laws and regulations; examining and testing equipment, machinery, safety devices and protective equipment, and reviewing safety practices; recommends necessary changes or revisions; serves as a technical advisor on safety inspectional and educational activities; may supervise several sub-professional safety inspectors.

Knowledges and Abilities Required:

In addition to the knowledge and abilities indicated at the lower levels, this level requires: a thorough knowledge of standard guides, precedents, methods and techniques in the area of specialization and a good working knowledge of established methods and procedures used in related areas; a thorough knowledge of applicable laws, regulations, policies and procedures of the agency, and of other sources of information, such as that supplied by other government agencies, private industry, and educational institutions.

The ability to function independently, under only general supervision, in performing normal work assignments; modify, adapt, and make compromises with standard guides, precedents, methods, and techniques; develop effective coordination and secure cooperation with others, and plan and prepare complete and comprehensive engineering reports; the ability to supervise and instruct lower-level professional and nonprofessional personnel as required for certain positions.

ENGINEER V 7.005

Duties Summary:

Supervises the planning, design, construction, maintenance and/or operation of a number of major and complex engineering projects; or works independently on advanced planning, design or research projects involving elements of a highly critical or unprecedented nature; and performs other duties as required.

Distinguishing Characteristics:

This level is characterized by the performance of work which requires the application of intensive and diversified knowledge of engineering principles and practices in a broad area of assignment. An incumbent is given assignments in terms of general objectives and relative priority, and works with considerable independence in carrying assignments through to completion. Projects typically contain complex problems requiring adaptation, modification, or compromise of standard principles, theory, procedures, techniques, methods, guides and/or precedents. Completed work is reviewed for adequacy in terms of broad objectives and for conformance to policy. Technical decisions and recommendations are rarely changed by the superior except for reasons of policy, public relations or budgetary considerations. Controversial policy questions, as well as novel or critical aspects or approaches, are discussed with the supervisor. The same guidelines used by engineers at lower levels are also available at this level; however, since they are often inadequate, controversial, or incomplete, a position at this level requires the use of initiative, originality and judgment in the interpretation, application, and adaptation of standard guides to varying situations, and in devising alternative solutions to unusual problems.

A position in this class is typically (but not exclusively) a supervisory position involving planning, directing, advising on and reviewing the engineering activities of a small organizational group assigned a substantial amount of work of the Engineer IV level, or of several small groups headed by intermediate supervisors in which a substantial amount of the non-supervisory work is of the III level.

Assignments carried out individually by an engineer at this level deal with systems, facilities or structures characterized by some of the following conditions: (a) they encompass a broad range of elements some of which are conflicting and difficult to reconcile or accommodate, (b) they pose critical problems of performance requirements vs. costs under application of standard materials and criteria, or (c) they require designs and plans which must deal with factors of an undetermined or unprecedented nature.

An engineer at this level normally has more frequent and wider contacts than those at the preceding level in coordinating the activities of his section with those of organizational segments having related assignments, and in dealing with other government agencies, contractors, utility companies, and the general public. Such duties may constitute a substantial portion of the work of a position at this level.

Examples of Duties:

The following duties are characteristic of all supervisory positions at this level irrespective of the area of specialization: Initially reviews projects

received, plans method of approach, and makes work assignments to employees supervised for most effective use of abilities and time; keeps informed on latest developments in the area of specialization and advises employees supervised of current data; solves engineering problems referred for help, advising on appropriate methods and techniques to be used and applicability of precedents, but recognizing when problems should be referred to other engineers or higher authority; ensures coordination of the work with related projects both within and outside the section; reviews technical reports, project data, and completed work submitted by subordinates for technical accuracy, adequacy, validity of conclusions, conformance to policies and regulations, consistency of test results, and feasibility of recommendations made; recommends priority and duration of assigned work; prepares budget estimates for major and long-range projects; performs personnel management functions such as selecting employees and evaluating performance, taking disciplinary action as required, and training new employees in the methods and techniques to be followed in accomplishing assignments; initiates and prepares technical reports and correspondence.

The following are examples of assignments of engineers at this level; these are illustrative only, and are not all-inclusive:

Engineer (Civil) - Supervises the construction, maintenance or operation of several civil engineering projects operating simultaneously; prepares or supervises the preparation of designs, plans, specifications, and estimates for highways, tunnels, bridges, reservoirs, retaining walls, culverts, pipelines, sewers, sidewalks, wharves, and other concrete steel or timber structures; assigns resident engineers and inspectors to construction projects; approves changes during construction; makes special investigations and studies; prepares or supervises the preparation of reports, work schedules and records of civil engineering projects.

Engineer (Buildings) - Supervises a small group of professional and subprofessional architectural and engineering personnel engaged in planning, design, construction, maintenance and/or inspection of buildings and related facilities; assigns engineers and inspectors to construction projects, and recommends changes during construction; or coordinates and manages the work of private consultants on planning projects (including master plans for systems of buildings) or in the preparation of construction plans, specifications, and cost estimates for individual buildings or complexes of buildings and facilities, and ensures that subsequent phases are completed expeditiously and efficiently in order to meet project deadlines and budgets.

Engineer (Electrical) - Is responsible for an electrical engineering program or function, including the supervision and coordination of work of lower-level electrical engineers engaged in preparation of designs, plans, specifications and estimates for illumination, power and intercommunications for schools and other public buildings, and inspecting electrical work in progress; reviews electrical plans and specifications prepared by contract architects or engineers for compliance with electrical code and departmental standards, and recommends necessary changes; serves as technical consultant to departmental and contract engineers and architects on electrical engineering problems.

Engineer (Environmental) - Develops and administers an environmental engineering program as head of a large section, or assistant to the chief of a major branch including one or more specialized programs of environmental engineering. Gives

leadership, advice and guidance in the field of environmental engineering to local officials and the general public; guides and directs educational and regulatory activities pertaining to environmental health program; provides supervision and technical advice to engineers and other employees engaged in surveys, inspections, and preparation of plans, specifications, reports and recommendations; cooperates with other phases of the environmental engineering program and with other services of the Department of Health in areas where joint action is appropriate.

The following is an example of the duties of a technical expert in a specialized area or program function: Performs staff advisory, consulting and reviewing duties, and directs and works with a staff of specialists as assigned in long-range planning, research and/or development of specific projects, programs, and functions such as harbors, airports or highways.

Knowledges and Abilities Required:

In addition to the knowledge and abilities required at lower levels, this level requires: A thorough and extensive knowledge of standard guides, precedents, methods, and techniques in the area of specialization, and a good knowledge of the principles, practices, methods, and techniques of other branches of engineering and other organizational units as they relate to the area of assignment; in positions requiring significant administrative and/or supervisory responsibility, a knowledge of administrative and supervisory principles and techniques.

The ability to plan and organize large-scale assignments containing many problems and variables; to develop new lines of approach and new or improved techniques, and to solve problems where critical gaps occur in data or precedents. In supervisory and administrative positions, ability to supervise and direct effectively the work of others; to relate the work of his program to overall departmental objectives, and to deal tactfully with public and other officials.

ENGINEER VI 7.006

Duties Summary:

Supervises the professional and nonprofessional personnel of a major engineering activity; develops procedures and standards for carrying out his specialty in the organization, and represents the organization with authority on technical engineering matters within the area of specialization; may direct a large engineering section or assist in directing a large engineering division or district office as a technical specialist in planning, development, design and/or research, may lead the efforts of a team engaged in carrying out difficult or critical project assignments with emphasis in the area of specialization; or serves as a staff specialist responsible for overall control and coordination of a number of major and complex engineering projects or programs; and performs other duties as required.

Distinguishing Characteristics:

This class is distinguished by its responsibility for a wide variety of complex engineering programs or projects. An engineer at this level works under very general administrative direction; assignments are typically received in terms of broad, general objectives, and the incumbent is responsible for determining methods, procedures, scheduling of work activities, and assignment of personnel to accomplish

the work most effectively. The supervisor is consulted on unusual or controversial situations, and on administrative and budgetary matters. Completed work is reviewed for adequacy in terms of broad objectives and for conformance with policy, but is seldom subject to technical review.

An engineer in this class plans, directs, advises on and reviews the engineering activities of a small group of technical engineering specialists, or several groups headed by intermediate supervisors in which a substantial amount of the non-supervisory work is of the journeyman engineer level. Much of the engineering work supervised is characterized by non-applicability of established criteria and technical precedents, and by inadequacy or unavailability of data. These problem situations require originality and judgment in the skillful application of engineering knowledge to develop appropriate techniques or to evaluate those developed by subordinates.

An engineer at this level carries out the more difficult person-to-person relationships for the work group supervised. The majority of such contacts are of a technical nature with key officials in various echelons of the State government, and with other jurisdictions, private industry, research institutions, and the public, in the area of specialization.

At this level an engineer makes decisions and commitments in planning, directing, interpreting and coordinating complex engineering work typical of his area of responsibility, which often necessitates skillful improvisation, deviation, and important engineering compromises, and which frequently influence ultimate actions and decisions of the supervisor or other higher authority, and may serve as the basis for developing or changing governing policy or regulations.

Examples of Duties:

Supervisory and administrative responsibilities at this level typically include: Planning, directing, advising on and reviewing the work of subordinate professional and nonprofessional engineering personnel through subordinate supervisors; formulating procedures and work priorities and making broad work assignments, developing new criteria, techniques or approaches to guide subordinates in overcoming problems which cannot be solved by application of conventional techniques or procedures; analyzing and reviewing work of subordinates in terms of technical results and for conformance with departmental policies and regulations, and with legal requirements; coordinating activities of his section with other sections or departments, other government agencies, private industry, and the public; assisting in the development of broad work programs and policies and in preparing and justifying budgets; initiating and reviewing engineering investigations and research studies; recommending organizational and operational changes; preparing contracts, technical and administrative reports and correspondence.

The following are examples of assignments of engineers at this level; these are illustrative only, and are not all-inclusive:

1. Supervises a large engineering section, or assists with the direction of a division or major branch or district office responsible for such engineering projects as design and construction of buildings, highways, sewers, flood control projects, waterworks, harbors, and other public works structures and facilities.